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EVALUATION OF A PRECOMMERCIAL CHEMICAL THINNING ON MT. SHASTA RANGER DISTRICT, SHASTA-TRINITY NATIONAL FORESTS

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PSW FOREST AND RANGE EXPERIMENT STATION
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ABSTRACT

In October, 1980, an attempt was made to precommercially thin ponderosa pines in the Spring Hill 7 plantation by frilling and applying Tordon 101R. By the end of April, 1982, relatively few of the treated trees were completely dead, although the top few whorls of branches were dead on many trees. The main stem and lower branches of the treated trees appeared quite healthy. Secondary insects were active in some of the dead tree tops, but no trees were currently infested with primary bark beetles or borers. If there are no extraordinary stresses placed on the treated trees, most of them should remain alive for another year.

INTRODUCTION

The Spring Hill 7 plantation was treated by frilling and applying Tordon 101R in October, 1980 in an attempt to precommercially thin the trees. However, many of the treated trees still had partially green crowns a year after treatment and this caused District personnel to become concerned about the possibility of insects building up in the treated trees. The area was examined on November 3, 1981 by Gregg DeNitto and Mike Srago (3420, December 4, 1981). At that time there were some pine engraver, Ips spp., attacks on trees that were killed by the treatment, but very few on green treated or untreated trees.

Larry Ballew, Shasta-Trinity National Forests silviculturist, requested a re-evaluation of the area during the spring of 1982. Dave Schultz and Gregg DeNitto of the Forest Pest Management Staff, Bob Cates from the S.O., and Don Wopschall and Dave Trevisan from the District examined the plantation on April 27, 1982. The plantation is located several miles northeast

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of the city of Mt. Shasta. It covers nearly 1,000 acres and is comprised entirely of ponderosa pine planted in the early 1960's. The largest trees are 3-5 inches dbh and 15-20 feet tall. The treatment was generally applied to every other tree, with emphasis on retaining the better trees.

The situation in the plantation has not changed much in the nearly six months since it was last examined. The needles on the upper branch whorls of many of the treated trees were dead. Very few of the treated trees were completely dead. Most of them had live foliage in the lower crown and the stem was alive up into the part of the crown that had dead needles. There were some secondary roundheaded borers working in the dead leaders and branches of some treated trees. The few dead treated trees that had been attacked by pine engravers during 1981 were abandoned by the time they were examined this spring. None of the live treated or untreated trees examined were currently infested or under attack by primary bark beetles or borers. A few of the treated trees were attacked by the red turpentine beetle, Dendroctonus valens, last year, but were vigorous enough to pitch the beetles out.

The current condition of the trees that were incompletely killed during the attempted thinning indicates that they are fairly vigorous. Soil moisture is abundant and will probably maintain tree vigor for the remainder of the growing season. There is no apparent source of large numbers of pine engravers near the plantation and there is currently very little green pine slash in the area in which they could build up. This set of circumstances suggests that in the absence of extraordinary stresses placed on the incompletely killed trees, most of them will survive. The longer that the incompletely killed trees remain in the plantation, however, the greater the possibility that they will encounter some form of stress, such as drought. If that happens, the incompletely killed trees may come under attack by pine engravers. The pine engravers have a pheromone that aggregates beetles in the area of a successful attack, and the result could be group kills that include some of the leave trees.

MANAGEMENT ALTERNATIVES

1. Do Nothing. Most of the incompletely killed trees will probably remain alive through October 1982, or much longer in the absence of additional stress. They will continue to compete with the leave trees for moisture, nutrients and light. Eventually, additional stress, such as below normal precipitation, could result in group kills centered around the incompletely killed trees.

2. Retreat incompletely killed trees with herbicide. If successful, this would achieve the original goal of thinning the plantation without laying a large amount of slash on the ground at one time and with a low risk of a build up of slash-breeding insects. However, the fact that the crowns are already partially dead and that the cambium has been partially disrupted raises some questions about the success of a second herbicide treatment of these trees. If a second herbicide treatment only resulted in further weakening the incompletely killed trees due to partial herbicide uptake and

distribution, the result would probably be a heavy insect attack on the treated trees. The spillover of insects onto the untreated trees would most likely result in portions of the plantation becoming understocked.

3. Cut down incompletely killed trees. Because of the size of the area and the number of trees involved, a large volume of slash would be created. This would result in an increased fuel load and a large potential breeding site for pine engravers. The hazards could be substantially reduced if the boles of the trees were removed in a sale as fuelwood or poles. The hazards could also be reduced by chipping the slash or by using machinery such as a Hydro-axe to fell the previously treated trees and reduce the volume of the slash. An advantage to mechanical thinning is that it could also be used to achieve some brush reduction at the same time. Some of the previously treated trees have relatively normal appearing crowns so it would probably be necessary to do some sort of flagging or marking to allow the machine operator to discriminate between previously treated and leave trees. The risk of a pine engraver build up could be reduced during a conventional thinning by restricting the work to August and September and by lopping and scattering the slash in sunny places. Piling the slash for burning might reduce the fuel load, but it would be difficult to burn the piles without scorching some of the leave trees and if the green slash is not burned within about a month after cutting, it is likely that pine engravers will build up in it and result in the loss of some of the leave trees.